

WHAT IS CLAIMED IS:

1. A dual-cure silicone compound comprising a first polysiloxane component and a second polysiloxane component, said first polysiloxane component being a polyorganosiloxane having terminal mercapto and alkoxy functionality, said second polysiloxane component being a polyorganosiloxane having terminal vinyl and alkoxy functionality.

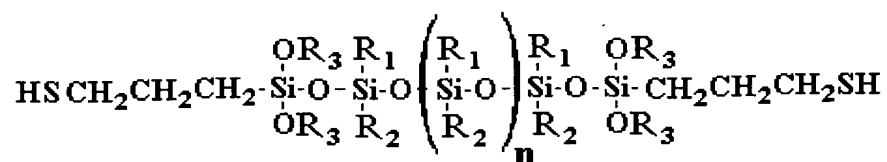
2. A dual-cure silicone compound according to claim 1, said first polysiloxane component having terminal mercapto and alkoxy functionality at both ends thereof.

3. A dual-cure silicone compound according to claim 1, said second polysiloxane component having terminal vinyl and alkoxy functionality at both ends thereof.

4. A dual-cure silicone compound according to claim 1, further comprising a photoinitiator.

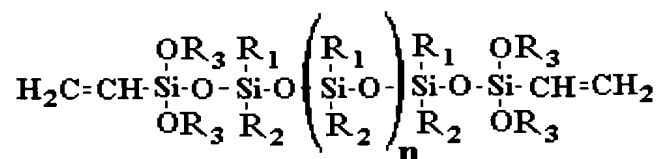
5. A dual-cure silicone compound according to claim 1, further comprising a water curing catalyst.

6. A dual-cure silicone compound according to claim 1, said first polysiloxane component having the following structure:



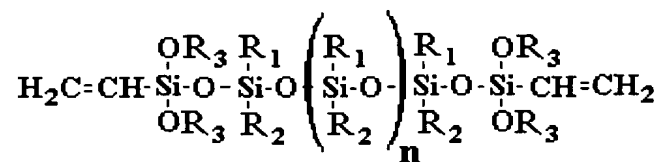
wherein R₁, R₂ and R₃ each is separately selected from the group consisting of organo groups.

7. A dual-cure silicone compound according to claim 1, said second polysiloxane component having the following structure:



wherein R₁, R₂ and R₃ each is separately selected from the group consisting of organo groups.

8. A dual-cure silicone compound according to claim 6, said second polysiloxane component having the following structure:



wherein R₁, R₂ and R₃ in both the first and second polysiloxane components, each is an alkyl group.

9. A dual-cure silicone compound according to claim 8, wherein R₁ and R₂ are each methyl groups, and R₃ is either a methyl or an ethyl group.

10. A dual-cure silicone compound according to claim 1, said first and second polysiloxane components being present in a nominal equivalent weight ratio in the range of 0.7:1 to 1.3:1.

11. A dual-cure silicone compound according to claim 1, further comprising a plasticizer.

12. A dual-cure silicone compound according to claim 1, said compound being effective such that a layer of said compound having a uniform total thickness of 0.1 inches exhibits at least 70 percent total curing, based on a UV-initiated curing mechanism, following two seconds of exposure to direct UV radiation having an average UV intensity of 151-185 mW/cm² measured at the surface of the layer.

13. A dual-cure silicone compound according to claim 1, said compound being an elastomeric material on curing thereof.

14. A dual-cure silicone compound according to claim 1, said compound being made from a mixture comprising 15-50 weight percent silanol terminated polysiloxane having a viscosity of about 5000 cps, 4-50 weight percent silanol terminated polysiloxane having a

viscosity of about 100 cps, 1-12 weight percent vinyl tri-oximosilane, 3-45 weight percent vinyl terminated polysiloxane having a viscosity of about 1000 cps, and 3-50 weight percent mercapto terminated polysiloxane having a viscosity of about 100 cps.

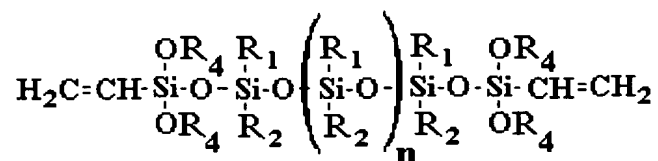
15. A dual-cure silicone compound according to claim 1, said compound being made from a mixture comprising 18-53 weight percent silanol terminated polysiloxane having a viscosity of about 20,000 cps, 2-40 weight percent silanol terminated polysiloxane having a viscosity of about 100 cps, 0.5-10 weight percent vinyl tri-oximosilane, 3-45 weight percent vinyl terminated polysiloxane having a viscosity of about 1000, and 3-48 weight percent mercapto terminated polysiloxane having a viscosity of about 100 cps.

16. A dual-cure silicone compound, said compound exhibiting both a UV-initiated crosslinking mechanism and a moisture-initiated crosslinking mechanism, wherein a layer of said compound having a uniform total thickness of 0.1 inches exhibits at least 70 percent total curing, based on the UV-initiated curing mechanism, following two seconds of exposure to direct UV radiation having an average UV intensity of 151-185 mW/cm² measured at the surface of the layer.

17. A dual-cure silicone compound according to claim 16, wherein a layer of said compound having a uniform total thickness of 0.4 inches exhibits at least 90 percent total curing, based on the UV-initiated curing mechanism, following two seconds of exposure to direct UV radiation having an average UV intensity of 151-185 mW/cm² measured at the surface of the layer.

18. A dual-cure silicone compound comprising a first polysiloxane component and a second polysiloxane component, said first polysiloxane component being a polyorganosiloxane having terminal mercapto and alkoxy functionality, said second polysiloxane component being a polyorganosiloxane having terminal vinyl and oximo functionality.

19. A dual-cure silicone compound according to claim 18, said second polysiloxane component having the structure:



wherein R_1 and R_2 each is an organo group, and R_4 is of the form $-\text{N}=\text{CR}_5\text{R}_6$ such that the $\text{O}-\text{R}_4$ linkage creates an oximine ($\text{O}-\text{N}=\text{C}$) structure.

20. A dual-cure silicone compound according to claim 19, wherein R_5 and R_6 each is a low order alkyl moiety.

21. A dual-cure silicone compound according to claim 19, wherein R_5 is methyl and R_6 is ethyl.

22. A silicone compound made from crosslinking a first polysiloxane component and a second polysiloxane component, said first polysiloxane component being a polyorganosiloxane having terminal mercapto functionality, said second polysiloxane component being a polyorganosiloxane having terminal vinyl functionality, said silicone compound being elastomeric.

23. A silicone compound according to claim 22, having a tensile strength of at least 1 kPa, and exhibiting at least 15 percent elongation at break.

24. A silicone compound according to claim 1, further comprising dimethylmercapto terminated polydimethylsiloxane.

25. A silicone compound according to claim 1, further comprising at least one of a) a vinylmethylsiloxane copolymer that is trimethyl terminated and having vinyl functionality pendent to the polymer backbone, or b) a dimethylvinyl terminated polydimethylsiloxane.

26. A dual-cure silicone compound comprising a first polysiloxane component and a second polysiloxane component,

said first polysiloxane component being selected from the group consisting of: a) polyorganosiloxanes having terminal mercapto and alkoxy functionality, and b) dimethylmercapto terminated polydimethylsiloxanes,

said second polysiloxane component being selected from the group consisting of: a) polyorganosiloxanes having terminal vinyl and alkoxy functionality, b) vinylmethylsiloxane copolymers that are trimethyl terminated and have vinyl functionality pendent to the polymer backbone, and c) dimethylvinyl terminated polydimethylsiloxanes.

27. A dual-cure silicone compound according to claim 26, further comprising a photoinitiator.

28. A dual-cure silicone compound according to claim 26, further comprising a water curing catalyst.